



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

JAN 20 2012

Mr. Thomas L. Clarke, Director  
Division of Mining and Reclamation  
West Virginia Department of Environmental Protection  
601 57<sup>th</sup> Street  
Charleston, West Virginia 25304

Re: NPDES Permit No. WV1029690 – New Permit  
Consol of Kentucky Inc.  
Buffalo Mountain Surface Mine  
SMCRA No. S501807  
EPA Receipt Date – October 24, 2011

*Tom*  
Dear Mr. Clarke:

I want to begin this letter by emphasizing my appreciation for the opportunity to work with you and your staff as the U.S. Environmental Protection Agency (EPA) reviews the draft West Virginia National Pollutant Discharge Elimination System (NPDES) permit for the proposed Buffalo Mountain Surface Mine. The West Virginia Department of Environmental Protection (WVDEP) has been very constructive during discussions with the EPA as you have worked to prepare a draft NPDES permit that protects water quality and meets the requirements of the Clean Water Act (CWA).

It is important for me to state that the EPA recognizes the importance of the Buffalo Mountain mine for providing jobs, stimulating the regional economy, and helping to meet the nation's energy needs. Our goal is to identify improvements to the State's draft NPDES permit to ensure that water quality is protected and requirements of the CWA are met.

The proposed Buffalo Mountain surface coal mine is among the largest single mining projects ever proposed in Appalachia. The mine will utilize a variety of surface mining methods, including mountaintop removal, which will involve the elimination of a significant portion of the ridgeline at Buffalo Mountain to the lowest coal seam being mined. The mine has received a variance from the law requiring that the mine be reclaimed to the "approximate original contour," which means that most of the waste rock and dirt generated by mining will be disposed of in adjacent stream valleys rather than returned to the mountain as part of mine reclamation. As a result, nearly ten miles (51,000 feet) of high-quality headwater streams will be buried under waste rock and dirt in 13 valley fills at the Buffalo Mountain site. The scale and magnitude of environmental and water quality impacts from the mine as currently proposed are as significant as any mining operation we have reviewed in the past 20 years.

The current scientific literature has increasingly documented the adverse water quality, environmental, and public health effects of Appalachian surface coal mining. Mountaintop mines and valley fills (MTM-VF) generally lead directly to five principal alterations to stream ecosystems: (1) springs, and ephemeral, intermittent streams, and small perennial streams are permanently lost with the removal of the mountain and from burial under fill, (2) concentrations of major chemical ions are persistently elevated downstream, (3) degraded water quality reaches levels that can be lethal to stream life, (4) selenium (Se) concentrations are elevated, reaching concentrations that have caused toxic effects in fish and birds, and (5) macroinvertebrate and fish communities are consistently and significantly degraded. These conclusions are based on information described in the peer-reviewed scientific literature, including a comprehensive EPA report entitled *The Effects of Mountaintop Mines and Valley Fills on Aquatic Ecosystems of the Central Appalachian Coalfields* (2011), and from a Programmatic Environmental Impact Statement (PEIS) released in 2005.

The extent and nature of water quality and biological impacts to waters downstream of surface coal mining activities are correlated to discharges from valley fills and associated sediment ponds. The draft NPDES permit for the Buffalo Mountain mine includes 159 outfalls, including twelve outfalls conveying discharges from thirteen valley fills. Many of the receiving streams are of high quality as reflected in baseline biological sampling (West Virginia Stream Condition Index (WVSCI) = 76 - 96). These scores demonstrate that streams at the Buffalo Mountain site are among the most pristine, healthy, and productive waterbodies found in the State and highly vulnerable to mining related water quality and environmental impacts.

The EPA's review of the mining operator's proposal indicates that feasible, cost effective steps are available to be incorporated into the operation to avoid and minimize the significant, adverse environmental and water quality impacts associated with the Buffalo Mountain mine. Unlike Buffalo Mountain's mine design, modern, technically feasible, and cost-effective mining practices are being proposed and incorporated by many mining companies into their mine designs with the intent to significantly reduce the adverse effects to the aquatic ecosystem. There are some available and helpful examples of steps that can reasonably be taken to maximize coal recovery and simultaneously protect water quality, public health, and the environment. We look forward to working closely with West Virginia, the mine operator, and our federal partners as the Buffalo Mountain mine is more fully evaluated under the CWA and the National Environmental Policy Act and remain hopeful that we can identify a project that protects water quality, safeguards public health, and provides valuable economic benefits.

In that regard, the Federal Highway Administration and the West Virginia Division of Highways recently decided to proceed with the preparation of a Supplemental Environmental Impact Statement (SEIS) on the Delbarton to Belo segment of the King Coal Highway, including impacts from the Buffalo Mountain mine. The SEIS process will provide a helpful vehicle for agencies to work together to identify improvements in the mine design to reduce potential adverse impacts to water quality, public health, and the environment.



Pursuant to Section 402 of the CWA, 40 C.F.R. §§ 123.43 and 123.44 and the *Memorandum of Agreement Regarding the Administration and Enforcement of the NPDES Program in West Virginia (1982)* (MOA), the EPA received the draft<sup>1</sup> NPDES permit cited above. The EPA provided a notification of a general objection on November 2, 2011, which served as a time extension for the full 90-day review period and will expire on January 21, 2012. We have concluded that, for the reasons described below and in Enclosure 1, this draft permit in its present form does not satisfy the CWA and its implementing regulations. This letter and Enclosure 1, therefore, serve as the EPA's specific objection to the draft permit.

Following a careful review of the permit and discussions with your office, we have determined that the draft permit is not as stringent as necessary to protect State water quality standards, including existing water quality of high-quality streams that would receive discharges from the proposed mine. We agree with the conclusion of the State that there is "reasonable potential" that discharges from the mine will cause or contribute to violations of the State's narrative water quality criteria. In these circumstances, the CWA contemplates that the permit will contain water quality-based limits sufficiently stringent to meet these criteria. The permit as drafted includes internal discrepancies and therefore does not contain enforceable Whole Effluent Toxicity (WET) limits and also does not require appropriate WET test criteria and endpoints that are necessary under the CWA. While the permit includes WET testing (or WET limits) in an effort to protect the narrative standard, best-available science demonstrates that WET testing (or WET limits) alone, in the context of this permit, do not adequately account for or protect against the effects of elevated levels of total dissolved solids or conductivity on native biota that are an important part of the aquatic ecosystem and critical to the ecological health of the affected streams. Finally, the draft permit and accompanying documentation do not reflect proper application of West Virginia's antidegradation procedures with respect to selenium limitations, and the draft permit inappropriately includes alternative, less stringent limitations for iron and aluminum at certain outfalls that are not justified by the applicant's socio-economic analysis.

Enclosure 1 provides greater technical detail on the bases for the EPA's specific objection and also identifies the effluent limitations and other conditions that would be included if the permit were to be issued by the EPA. Enclosure 2 provides additional comments and recommendations to improve the permit. We believe that the CWA and the EPA's regulations provide flexibility in responding to the issues we have identified and we look forward to continuing our constructive discussions with you to identify a permit that meets the requirements of the law.

We request that you provide the EPA with a copy of all comments received on this permit and WVDEP's responses. Pursuant to Section II.E.10 of the MOA and 40 CFR § 123.44, within ninety (90) days of your receipt of this letter, WVDEP or another interested person may request that a public hearing be held pursuant to 40 CFR § 123.44(e). If no public hearing is held, and

<sup>1</sup> Because WVDEP's cover letter and the MOA refer to this as a "draft" permit, this letter references the permit as a draft permit. Because the permit is being submitted to EPA following the public comment period, however, it is a "proposed" permit for purposes of 40 C.F.R. § 123.44. See 40 C.F.R. § 122.2.



WVDEP does not resubmit a permit that has been revised to meet our specific objections within ninety (90) calendar days of receipt of this letter, authority to issue the permit passes to the EPA. Any requests for a hearing on the specific objection and the procedure for resolving any objection are governed by 40 CFR § 123.44.

In accordance with Section 402(d) of the CWA and the EPA's regulations at 40 CFR §§ 122.4(c) and 123.44, a final NPDES permit may not be issued unless and until the EPA's objections have been resolved. We look forward to working with you to resolve the issues we identify in this letter and its enclosures. If you have any questions, please do not hesitate to contact me or your staff may call Ms. Evelyn MacKnight at (215) 814-5717 or Mr. Francisco Cruz at (215) 814-5734.

Sincerely,



Jon M. Capacasa, Director  
Water Protection Division

Enclosures

cc: Consol of Kentucky, Inc.



## ENCLOSURE 1

The draft NPDES permit for the proposed Buffalo Mountain Surface Mine proposes to authorize discharges from 159 outfalls, including 12 valley fill outfalls conveying discharges from the 13 valley fills and 147 on-bench sediment ponds. It also requires the permittee to collect data periodically from 20 in-stream monitoring locations. The drainage area from the 12 valley fill outfalls is 2270.86 acres or 68.2% of the total drainage area. The Buffalo Mountain Surface Mine, as proposed, would include 13 valley fills that would bury over 51,000 feet (more than 9.5 miles) of headwater streams of high ecological value as reflected in baseline biological sampling.

This Enclosure 1 identifies the bases for the EPA's specific objection and revisions that must be made to the permit to ensure that the permit and the procedures followed in connection with formulation of the permit comply with the CWA, 40 C.F.R. Part 122 and other regulations promulgated under the CWA. The permit revisions described herein also represent limitations and conditions that would be included in the permit if it were to be issued by the EPA.

The EPA's specific objections are based upon the draft permit and documentation received from WVDEP on October 24, 2011, including but not limited to baseline water quality information, a copy of the Aquatic Ecosystem Protection Plan (AEPP), and the Alternatives Analysis and Socio-Economic Importance Demonstration (AASEID). Our review is limited to the statutory and regulatory provisions of the NPDES program, and does not address related concerns with the impacts resulting from the discharge of dredged or fill material in waters of the United States, including issues such as further avoidance and minimization of those impacts, compensatory mitigation for unavoidable impacts, and other considerations relevant to the issuance of a CWA Section 404 permit for the proposed project. This letter and the enclosures should not be construed as superseding, preempting or limiting EPA's comments and consideration of issues under other authorities (including the National Environmental Policy Act and Section 404 of the CWA) which may provide a different scope of review.

**Specific Objection 1: The draft permit does not contain effluent limits and conditions as stringent as necessary to achieve West Virginia's applicable water quality standards**

West Virginia's applicable narrative water quality criteria (W. Va. CSR § 47-2-3.2) state:

3.2. No sewage, industrial wastes or other wastes present in any of the waters of the state shall cause therein or materially contribute to any of the following conditions thereof:

\* \* \*

3.2.e. Materials in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life;

\* \* \*



3.2.i. Any other condition, including radiological exposure, which adversely alters the integrity of the waters of the State including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

We agree with the presumption in the draft permit that discharges from the valley fill Outfalls (034, 051, 052, 054, 061, 062, 070, 074, 080, 083, 087, and 094) have reasonable potential to cause or contribute to violations of the aforementioned applicable narrative water quality criteria.

Pursuant to West Virginia's Permitting Guidance for Surface Coal Mining Operations to Protect West Virginia's Narrative Water Quality Standards dated August 12, 2010, and revised August 18, 2010, the draft permit proposes to address the reasonable potential to cause or contribute to excursions from the narrative water quality criteria at these outfalls primarily by including Whole Effluent Toxicity (WET) monitoring and limits using the organism *Ceriodaphnia dubia* (*C. dubia*), and monitoring for conductivity, total dissolved solids, and sulfates.

**Objection 1(a): The Permit does not contain enforceable WET limits and does not require appropriate WET test acceptability criteria and endpoints**

The draft permit contains a discrepancy between Part A and Part D.10. Part A appears to include chronic WET limits for Outfalls 034, 051, 052, 054, 061, 062, 070, 074, 080, 083, 087, and 094, while Part D.10 appears to require WET testing only until there is a second toxicity trigger, at which time the permittee must submit an adaptive management plan and a permit modification "to place WET limits in the permit." This condition in Part D.10 is inconsistent with the WET limits specified in Part A of the permit. It is also inconsistent with the requirement that where a discharge has reasonable potential, the permit must include a WET limit – not merely testing or planning requirements. 40 CFR 122.44(d)(1)(v).

Effluent monitoring conditions alone are not consistent with 40 CFR 122.44(d)(1)(v), which requires that the permit contain effluent limits where a discharge has reasonable potential to cause or contribute to excursions from a narrative criterion. The term "effluent limitation" is defined in the CWA as a "restriction... on quantities, rates, and concentrations of chemical, physical, biological and other constituents..." CWA section 502(11), 33 U.S.C. § 1362(11). Effluent monitoring requirements are not a "limit" or "limitation" within the meaning of EPA's regulations and the CWA. *Cf.*, 54 Fed. Reg. 23868, 23875 (June 2, 1989).

Accordingly, to resolve the specific objection, the draft permit must be revised to assure that enforceable chronic WET effluent limitations for Outfalls 034, 051, 052, 054, 061, 062, 070, 074, 080, 083, 087, and 094 are included in the permit.

In addition, the language in Part D.10 must be revised in other ways because it is inconsistent with the approved EPA Test Method 1002.0. 40 CFR § 136.3(a) Table IA. Part D.10 refers to "survival of reproduction," which is not a WET test method endpoint. The appropriate test method endpoint is "survival and reproduction" consistent with EPA Method

1002.0. In addition, the permit must require approved EPA testing endpoints for chronic *C. dubia* WET tests (EPA Test Method 1002.0) for lethal (i.e., survival measured as a No-Observed-Effects-Concentration) and sublethal (i.e., reproduction measured as an EC<sub>25</sub>) effects. The permit as written does not include all of the necessary test acceptability criteria (TAC) and is unclear as to specifying an appropriate dilution series. The permit must be revised to include all required TAC in passing WET chronic *C. dubia* Test Method 1002.0 and 0.5X dilution series (100, 50, 25, 12.5, 6.25% and control).

If the EPA were to issue this permit, the Agency would include the WET limitations identified in Part A of the draft permit and revise Part D.10 to incorporate WET limits, as opposed to WET triggers, and to ensure consistency with Test Method 1002.0 including the appropriate TAC, dilution series, and approved EPA testing endpoints for chronic *C. dubia* WET tests.

**Specific Objection 1(b): The permit does not include chemical- or parameter-specific limitations that achieve the narrative criterion**

As discussed above, where there is reasonable potential to cause an excursion from a narrative criterion, a WET limit is required as specified in 40 C.F.R. 122.44(d)(1)(v). In addition, where a state has not established a water quality criterion for a specific chemical pollutant that has the reasonable potential to cause or contribute to an excursion above a narrative criterion, 40 CFR 122.44(d)(1)(vi) requires the permit writer to establish effluent limits using a calculated criterion, proposed 304(a) criterion, or an indicator parameter. Here, as discussed below, there is evidence demonstrating that elevated levels of conductivity have reasonable potential to cause or contribute to an excursion from the narrative criteria, and therefore a specific limit on conductivity or an appropriate surrogate parameter<sup>1</sup> is required, derived based on one of the methods prescribed in the regulation. In the context of this permit, even if an appropriate WET limit were included in the permit, such a limit by itself is not an appropriate indicator parameter for conductivity as required by 40 CFR § 122.44(d)(1)(vi)(C)(2) and CWA Section 301(b)(1)(C).

The documentation provided with the draft permit and other information available to the EPA demonstrate that total dissolved solids (TDS) and conductivity will be present in the effluent from, at a minimum, Outfalls 034, 051, 052, 054, 061, 062, 070, 074, 080, 083, 087, and 094 at levels that have reasonable potential to cause or contribute to a violation of the narrative water quality criteria.<sup>2</sup> Available science demonstrates that WET is not a reliable predictor of

<sup>1</sup> Salinity is often expressed in terms of specific conductivity. Conductivity is the ability of a solution to carry an electric current at a specific temperature (normally 25° C) and is normally reported as microsiemens per centimeter (µS/cm). Whereas "salinity" refers to the environmental property that is being measured, "conductivity" refers to the *measure* of salinity. Conductivity and total dissolved solids (TDS) both increase as the concentration of ions in a solution increase and are very strongly correlated. Conductivity is an excellent indicator of the total concentration of all ions, and is typically reported by state and federal monitoring agencies because it is an instantaneous measurement that can be collected in situ with a meter, does not require a laboratory analysis, and is precise and accurate.

<sup>2</sup> See E.R. Merriam, J.T. Petty, G.T. Merovich, J.B. Fulton & M.P. Strager, *Additive effects of mining and residential development on stream conditions in a central Appalachian watershed*, J. N.Am. Benthol. Soc., 2011

whether a WVSCI score of at least 68 will be maintained when the parameter of concern is a change in the major ion concentration because the macroinvertebrate assemblage in central Appalachian streams, which forms the foundation of the aquatic community, is more sensitive to the effects of elevated TDS and conductivity than the standard WET testing organisms due to differences in physiology. The EPA's Science Advisory Board has stated that, in this context, traditional laboratory surrogates (including crustaceans such as *C. dubia*) are not suitable for testing the effect of changing major ion concentrations because laboratory surrogates employ a different approach to osmoregulation than the native biota, making them less vulnerable to high concentrations of major ions. U.S. Environmental Protection Agency Science Advisory Board, Panel on Ecological Impacts of Mountaintop Mining and Valley Fills, *Review of Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams*, Sections 3.2 and 3.6 (March 25, 2011).<sup>3</sup> Independent analysis performed by the EPA Region III confirms that WET is not a reliable predictor of impairment as measured by the biological WVSCI score when the parameter of concern is a change in the major ion concentration.

Accordingly, while we strongly support WVDEP's use of WET limits as a means for controlling aggregate toxicity in the effluent, the context of this permit requires that the permit include effluent limits for conductivity or a surrogate parameter consistent with 40 C.F.R. 122.44(d)(1)(vi) in addition to WET limits. While we appreciate that WVDEP has included monitoring requirements for conductivity, sulfates and TDS, as discussed above, effluent monitoring conditions alone do not constitute an effluent "limit" in an NPDES permit.

We recognize that, as part of its Aquatic Ecosystem Protection Plan (AEPP), the applicant submitted data from the Peg Fork Surface Mine in the Miller Creek watershed that the applicant believes indicates that the macroinvertebrate assemblage in Miller Creek as measured by its West Virginia Stream Condition Index (WVSCI) scores may not be as sensitive to elevated levels of TDS and conductivity as predicted in certain studies. While the Peg Fork Surface Mine is in the Miller Creek watershed, most of the wastewater from the Buffalo Mountain project (including discharges from 12 of the 13 valley fills) will discharge to streams in the Pigeon Creek watershed. A recent study conducted in the Pigeon Creek watershed concluded that impaired WVSCI scores in the Pigeon Creek watershed are associated with elevated levels of conductivity from mining activities.<sup>4</sup> That study is consistent with other scientific evidence that the ionic mixture associated with conductivity in this region is associated with significant water quality effects.<sup>5</sup>

---

30(2):399-418, and discussion *infra*.

<sup>3</sup> See, also., Merricks, T.C., et al, 2007, *Coal-mine hollow fill and settling pond influences on headwater streams in southern West Virginia, USA*. Environmental Monitoring and Assessment 129(1-3):359-378.

<sup>4</sup> E.R. Merriam, et al. (2011).

<sup>5</sup> See, e.g., U.S. Environmental Protection Agency Office of Research and Development, *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams* (EPA/600/R-10/023f) (March 2011); Pond, G.J., M.E. Passmore, F.A. Borsuk, L. Reynolds, and C.J. Rose. 2008. *Downstream Effects of Mountaintop Coal Mining: Comparing Biological Conditions Using Family- and Genus-Level Macroinvertebrate Bioassessment Tools*. J. N. Am. Benthol. Soc. 27(3):717-737.



The permit must be revised to add effluent limitations at the valley fill outfalls discharging to the Pigeon Creek watershed (Outfalls 034, 051, 052, 054, 062, 070, 074, 080, 083, 087, and 094), such as conductivity, TDS and/or sulfates and bicarbonate, that account for the effects of the ionic mixture of the discharge and are sufficient to achieve a discharge quality that does not “adversely alter[ ] the integrity of the waters of the State” including not allowing any “significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems” consistent with the applicable narrative water quality criterion. As to developing a numeric interpretation of narrative standards that account for the effects of conductivity, the EPA recommends that the State consider the levels of conductivity associated with impairment of the WVSCI score identified in the peer-reviewed published papers, including E.R. Merriam, *et al.* (2011) and G. Pond, *et. al* (2008), as well as the data and analysis contained in EPA’s final report, *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams*. EPA believes that chronic levels of conductivity based upon these studies would generally be an appropriate numeric interpretation used to derive a WQBEL, consistent with procedures described in EPA’s *Technical Support Document for Water Quality-Based Toxics Control* (TSD).<sup>6</sup> Such limitations may take the form of, for example, numeric effluent limitations based upon a parameter of concern or an indicator parameter that would be equally protective.

If the permit were to be issued by the EPA, the Agency would include additional effluent limitations to address the impacts from the ionic mixture (such as an effluent limitation for conductivity at a level identified by the scientific literature as sufficiently protective) sufficient to achieve the applicable narrative water quality standard at the outfalls discharging to the Pigeon Creek watershed (Outfalls 034, 051, 052, 054, 062, 070, 074, 080, 083, 087, and 094). Such limitations would take the form of numeric effluent limitations in the range of 250 uS/cm - 500 uS/cm expressed as a monthly average (with at least twice monthly monitoring) or an equally protective numeric effluent limitation based upon an appropriate surrogate parameter (such as TDS or sulfates and bicarbonate).

**Specific Objection 2: West Virginia’s Antidegradation Procedures were not applied to the selenium limits included in the permit**

We are pleased that the draft permit includes effluent limits for selenium at all outfalls. It appears, however, that West Virginia’s Antidegradation Implementation Procedures were not applied to the selenium limits included in the permit, despite the fact that the information shows that the discharges will result in significant degradation of the water quality as it relates to selenium. West Virginia’s antidegradation policy and implementation procedures are intended to deter new and expanded discharges from using up all remaining assimilative capacity, which would leave no capacity for future discharges, and little margin for error in protecting uses. West Virginia’s antidegradation implementation procedures apply to “regulated activities that have the potential to affect water quality,” W. Va. CSR § 60-5-1.5, and more specifically to a regulated

---

<sup>6</sup> United States Environmental Protection Agency (USEPA). 1991. Technical Support Document for Water Quality-Based Toxics Control. Office of Water. EPA/505/2-90-001. March 1991..

activity that “is a new or expanded activity that would significantly degrade water quality.” *Id.* § 60-5-5.6.a.1. According to the Rationale Page, all receiving streams were assigned Tier 2 status for selenium. Degradation for a Tier 2 stream “shall be deemed significant if the activity results in a reduction in the water segment’s available assimilative capacity (the difference between the baseline water quality and the water quality criteria) of ten percent or more at the appropriate critical flow condition(s) for parameters of concern.” *Id.* § 60-5-5.6.c. The term “parameter of concern” includes “any parameter for which numeric water quality criteria have been adopted in 47CSR2....” *Id.* § 60-5-2.7. West Virginia has a chronic numeric criterion of 5.0 µg/L for selenium. Accordingly, under West Virginia’s antidegradation policy and implementation procedures, discharges from the draft permit may not lower water quality for selenium absent an agreement by the applicant to implement upstream controls to offset the impact or an appropriate demonstration of socio-economic necessity. W. Va. CSR § 60-5-5.6 & 5.7.

The receiving streams in this draft permit have assimilative capacity for selenium, which is the difference between the selenium baseline concentration and the chronic water quality criterion of 5.0 µg/L. For 111 outfalls, wasteload allocations were calculated to limit water quality degradation to no more than ten percent of the existing assimilative capacity for selenium—the threshold for significant degradation under West Virginia law. If the discharges exceed those load allocations, then the discharges significantly degrade the water quality and must undergo Tier 2 antidegradation review.

However, the waste load allocations that would prevent significant degradation were not adopted as permit limits, nor did the discharges undergo Tier 2 antidegradation review. Instead, the draft permit assigns all outlets the same discharge limitations for selenium, 4.7 µg/L average monthly and 8.2 µg/L maximum daily, which are less stringent than the waste load calculated to prevent significant degradation. The Rationale Page states: “All outlets received a limit for Se [selenium] of 4.7 to 8.2 µg/L since mining will be conducted in target coal seams and a materials handling plan is required for Selenium.”

Because the draft permit allows significant degradation of water quality as it relates to selenium, the proposed discharges must undergo Tier 2 antidegradation review, which requires an alternatives analysis and a socio-economic review, subject to public participation. W. Va. CSR 60-5-5.7, 5.8, and 5.9.

If the EPA were to issue this permit, the Agency would either include effluent limitations for selenium based on the wasteload allocations calculated to limit water quality degradation to no more than ten percent of the existing assimilative capacity for selenium provided in the permit documentation, or evaluate and make a determination based upon an alternatives analysis and socio-economic justification provided by the applicant consistent with W. Va. CSR 60-5-5.7, 5.8 and 5.9.

**Specific Objection 3: Inappropriate inclusion of alternative, less stringent limits for iron and aluminum at certain outfalls**

The draft permit assigns less stringent, alternative limits for iron and aluminum at certain outfalls in lieu of wasteload allocations calculated pursuant to West Virginia's antidegradation implementation procedures, despite the fact that the applicant withdrew its request for such alternative limits because additional treatment to meet the proposed limits is feasible. According to the Rationale Page, all receiving streams were designated Tier 2 (i.e., high quality) for aluminum and all receiving streams except those that flow directly to Pigeon Creek were designated Tier 2 for iron. As part of the Alternatives Analysis and Socio-Economic Importance Demonstration (AASEID), the applicant withdrew a request to lower water quality at certain outfalls. West Virginia's antidegradation implementation procedures state, "if reasonable alternative(s) [to the proposed activity] exist, the alternative or combination of alternatives that provide the least amount of degradation shall be implemented up to the determined reasonable and cost-effective threshold." W. Va. CSR § 60-5-5.7.d. The AASEID compares the costs of complying with the proposed effluent limitations using pH adjustments and increased retention time against the base treatment cost. For four sets of outfalls, the AASEID determines that there would be no additional cost to meet the proposed effluent limitations using these treatment methods:

Four groups of outlets [outfalls] are found to achieve the retention time necessary to meet the proposed effluent limitations. These outlets include 009, 010, 154 and 155; 020, 022, 023, 027, 028, 054-057, 097, 110 and 114-117; 072, 073, 074, 088, 096, 131-132 and 139-140; and 041, 042, 046, 047, 048, 059, 060, 061, 066, 075, 076, 077 and 146-151. Therefore, the proposed effluent limitations for these outlets are considered achievable and alternative limits cannot be requested. The remaining outlets continue to be evaluated as they exceed the 110 percent cost threshold. (Potesta & Associates, Inc., 2010, p. 10)

Despite the evidence that the proposed effluent limitations are achievable and the applicant had withdrawn its request for alternative limits, the draft permit incorporates alternative limits for the above-referenced outfalls. The permit must be revised to provide the original, proposed water quality-based effluent limits for aluminum and iron at these outfalls.

If the EPA were to issue this permit, the Agency would include effluent limitations for aluminum and iron at the above-referenced outfalls consistent with the waste load allocations calculated to limit water quality degradation to no more than ten percent of the existing assimilative capacity for those parameters as provided in the permit documentation:

Outlet	Iron		Aluminum	
	Average monthly (mg/l)	Max. daily (mg/l)	Average monthly (mg/l)	Max. daily (mg/l)
009, 010, 154 and 155	1.12	1.95	0.39	0.68
020, 022, 023, 027, 028, 054-057, 097, 110 and 114-117	0.88	1.52	0.37	0.63
072, 073, 074, 088, 096, 131-132 and 139-140	0.92	1.55	0.41	0.72
041, 042, 046, 047, 048, 059, 060, 061, 066, 075, 076, 077 and 146-151	0.85	1.48	0.36	0.62

Source: Potesta & Associates, Inc. (2010). Outlets are grouped as in the source document.



## **ENCLOSURE 2**

This Enclosure 2 provides additional comments and recommendations to WVDEP intended to improve the permit. Enclosure 2 does not describe bases for the EPA's specific objection. We request that WVDEP address these comments and provide a response.

### **Scope of the authorization**

Given the number of valley fills, the long time horizon (15 years), and the potential water quality impacts of the project, we recommend that the implementation of this mining operation be authorized in such a manner that discharges from later phases of the project are not authorized years in advance of construction. To accomplish this, we recommend that WVDEP consider not authorizing during this permit cycle discharges from outfalls that are not scheduled to be constructed during the five-year term of this permit. Alternatively, WVDEP could structure its authorization consistent with the phases of the mine plan, with discharges associated with each phase of the mine plan authorized only upon completion and evaluation of the previous phase. Either approach would allow WVDEP to evaluate whether best management practices and other controls are performing as anticipated and to make any necessary adjustments before additional outfalls are authorized and constructed. We believe that the significant size of this mining project, when viewed in the context of past water quality effects experienced within this watershed and from similar activities, warrants inclusion of such an approach. We also note that the applicant has been willing to incorporate such an approach within its Section 404 authorization for the Peg Fork Surface Mine.

### **Lowering of Water Quality as Measured by Biological Score**

We are concerned that the draft permit lacks any provision to prevent the very high water quality as measured by biological score in most of the receiving streams from being significantly lowered.

Preliminarily, we are concerned that the Biological Monitoring Condition (Part D.9) in the draft permit discusses the assessment as if it were not complete. The permit condition should be revised to state that the biological data submitted in the Aquatic Ecosystem Protection Plan (AEPP) established the baseline for each biological station prior to initiation of the permitted mining activity. In addition, while Part D.9 defines an acceptable biological condition (see below for our comments regarding how the acceptable biological condition is defined), it lacks enforceable provisions to protect instream water quality as measured by the biological score. As currently drafted, failure to maintain the defined acceptable biological condition does not appear to constitute a permit violation. As drafted, in the event that the defined acceptable biological condition is not maintained, the permittee is required only to assess sources in the watershed. We recommend that the permit language be revised to clarify that failure to maintain the defined acceptable biological condition is a violation of the permit.

Most significantly, we are concerned that defining an "acceptable" biological condition as the 5<sup>th</sup> percentile of reference (currently WVSCI = 68), Biological Monitoring Condition (Part D.9) would allow conditions in these very high quality streams potentially to be lowered all the

way to 68, the lowest WVSCI score considered by WVDEP to be supportive of the narrative criteria. As indicated in the table in the next section, most of the baseline sampling locations have very high WVSCI scores in range of 80s to 90s, reflecting very good conditions.

We believe that West Virginia's Antidegradation Policy provides sufficient authority for the permit to include provisions to protect the high quality of these streams as measured by their biological scores. West Virginia's Antidegradation Policy is not parameter-specific, and requires that "existing high quality waters must be maintained at their existing high quality." CSR 74-2-4.1.b. "High quality waters" are defined as "those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses." CSR 47-2-2.8 & 4.1.b; CSR 60-5-5.1. Nothing in West Virginia's antidegradation implementation procedures would appear to preclude inclusion of permit provisions to protect high instream water quality as measured by biological score. While CSR 60-5-5.6.d states that "Significant degradation will be determined on a parameter-by-parameter basis for each parameter of concern that might be affected by regulated activity," CSR 60-5-2.7 defines "parameter of concern" as "any parameter for which numeric water quality criteria have been adopted in 47CSR2 and any other parameter for which numeric criteria are not established but where the discharge of such parameter has a reasonable potential to either cause or contribute to a violation of the narrative criteria outlined under 47CSR2, section 3."

We recommend that WVDEP consider revising Part D.9's definition of "acceptable" biological condition to protect against significant lowering of the very high water quality of the receiving streams as measured by their biological scores. We note that there are various methodologies to accomplish this, such as identifying a statistically significant departure from baseline scores based upon inter-annual variability of WVDEP reference sites. We would be pleased to work with WVDEP to identify an appropriate and defensible methodology.

### **Identification of sampling locations**

Part D.9, Bio-Monitoring, specifies the biological monitoring stations related with the 12 valley fills outfalls. The identification numbers for these stations have been truncated. The condition should be revised to reflect the correct biological monitoring station identification number, the correlated valley fill outfall, and the baseline WVSCI as specified in the AEPP, see table below.

Outfall No.	Biological Assessment Stations (BAS)	Baseline WVSCI
034	DBAS-UTPC034	87
051	DBAS-RFHC051	88
052	DBAS-RFHC052	96
054	DBAS-LFHC054	94
061	DBAS-MC061	92
062	DBAS-UT1RFHC062	91
070	DBAS-RFCB098	76
074	DBAS-LFCB074	93

080	DBAS-RFCB98	76
083	DBASL-FHC083	84
087	DBAS-RTB087	88
094	DBAS-PRC094	86

### **Submission of biological data**

We recommend that semi-annual biological monitoring be required, preferably during April-June and August-September. We further recommend that the permit require submission of the raw data (in electronic format, preferably MS ACCESS) as well as the calculated WVSCI score to allow for evaluation of the adequacy of the monitoring. We also request that genus-level data, as well as family-level data be submitted. As West Virginia's Department of Natural Resources requires this submission as part of the collection permit, this request should not represent a significant burden to the applicant. In reviewing the data submitted with this application and the raw data from the adjacent Peg Fork Surface Mine, which is operated by the applicant, we have identified potential issues concerning data collection. Three of the twelve baseline biological samples at the biological sampling locations (and 9 of 39 sites overall in the Spring 2011 survey) reported organism counts of under 100 organisms. Given other information available to the EPA about the condition of these streams, including the data collected by Merriam, *et al.* (2011), we would expect to find much higher organism counts. For example, Merriam *et al.* conducted sampling in the Pigeon Creek watershed in 2007-2008 and recorded thousands of organisms in the kicknets (approximate median of around 2000 organisms). This discrepancy calls into question the collection protocol, sampling location selection, and/or laboratory picking and subsampling procedures.

### **Chemical monitoring provisions**

We would like to see bicarbonate added to the list of chemical parameters for monitoring and that bicarbonate + sulfates values be reported as a separate line on the Discharge Monitoring Reports (DMRs). To evaluate the TDS in the effluents, additional testing and reporting should be required for magnesium, potassium, sodium, barium, strontium, using test method 200.7; for bromide, chloride, nitrate-n, nitrite-n and sulfate using test method 300.0; and alkalinity, bicarbonate and calcium carbonate using test method SM2320B.

In addition, where discharges from sediment control structures are *not* routed to one of the sediment ponds, the monitoring location should be prepared in a manner that will allow detection of interstitial flow. The outfalls from the sediment ditches generally are lined with several inches of rip rap. Viewed from the surface, there may not be visible flow, but there could be interstitial flow within and under the rip rap. The monitoring locations (which we assume are at the outfalls) should be prepared to allow detection of this interstitial flow.

### **Inappropriate inclusion of technology-based alternate storm limits for water quality-based parameters**

The draft permit contains (page 163 of 174) standard West Virginia provisions for alternate storm limitations. The authority for providing alternate storm limitations comes from 40 C.F.R. Part 434, which provides alternate technology-based effluent limitations for discharges that are caused by precipitation. In this case, however, the Rationale Page indicates that the draft permit includes zero (0) outfalls with solely technology-based effluent limitations and all outfalls with effluent limitations that are water quality-based. Specifically, effluent limitations for iron, aluminum, manganese, Whole Effluent Toxicity (WET), and selenium are water quality-based, and therefore, the alternate storm limits (which are technology based) should not apply to those parameters. While the draft permit does not authorize alternate storm limitations for aluminum, iron, and manganese, except for a 10-year storm event or greater, the permittee could construe page 163 as authorizing alternate storm limitations for selenium and WET because those parameters are not in the table. This may or may not have been what WVDEP intended. The permit should not authorize alternate storm limitations for any parameter for which there is a water quality-based effluent limitation, including selenium, WET, and any other water-quality based effluent limitation that ultimately may be included in the permit. The permit should be revised to clarify that alternate storm limitations are not authorized for parameters for which there are water quality-based effluent limitations.

### **Best Management Practices (BMPs)**

Pursuant to 40 C.F.R. 122.44(k)(4), an NPDES permit may include best management practices in addition to numeric effluent limits when the “practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the [Clean Water Act].” To date, much of the information available to EPA indicates that project design and other types of BMPs, such as special materials handling plans and compaction, may represent the most cost-effective way to better protect water quality by controlling parameters such as selenium, total dissolved solids, and conductivity. Accordingly, inclusion of BMPs to control for these parameters would be appropriate in this permit. The draft permit as written does not explicitly incorporate any specific best management practices.<sup>1</sup>

We recommend that, pursuant to 40 CFR 122.44(k)(4), the permit include BMPs that are reasonably necessary to meet the numeric effluent limits in the permit. While several BMPs are described in general terms in the AEPP, to the extent these BMPs form the basis for effluent limitations or other determinations related to the NPDES permit, these BMPs should be spelled out specifically in the NPDES permit. To the extent these BMPs are specified in greater detail in the SMCRA permit, the appropriate provisions of the SMCRA permit could be cross-referenced in the NPDES permit.

---

<sup>1</sup> We note that the permit does contain the following language, Page 174 of 174: “The herein activity is to be ... constructed or installed, and operated, used and maintained strictly in accordance with the terms and conditions of this permit, the plans and specifications submitted with Permit Application No. WV1029690, completed 09 day of May 2009....” This incorporation by reference, however, would not include the AEPP (dated July 26, 2011), the 2011 spring biological survey, and the AESEID (dated September 2009, and apparently amended March 2010).



BMPs also should be described with sufficient clarity to ensure that they are achievable, effective, and enforceable. Among other things, we are aware that the applicant stated in the SMCRA permit (Section O-8) that *"Pit cleanings, partings, and other potentially acid-toxic materials that cannot be neutralized by blending shall be identified and segregated during the mining process and promptly placed in an isolation zone within the backfill for final disposal."* WVDEP also has indicated that this BMP is something that was relied upon in formulating the NPDES permit; however, this BMP is not made an enforceable part of the NPDES permit. In addition, while the applicant identifies specific strata that may be potentially toxic, no volume estimate is provided. There is no plan view map showing where isolation zones for potentially acid-toxic materials will be placed. Isolation zones are not shown on cross-sections contained in O-1 of the SMA. Therefore, it is unclear whether there is sufficient area for storing potentially toxic material, including selenium-bearing material. Accordingly, we recommend that any BMP on which WVDEP relies in formulating the permit be included as an enforceable condition. For this particular BMP, we recommend that the Rationale Page document a volume estimate for acid-toxic materials, where those will be stored, and that there is sufficient storage area, particularly given the design configuration.

In addition to the BMPs described in the AEPP (minimization of storm water contact with pulverized material; bottom up construction of fills, revegetation and minimization of disturbed areas, special handling plans for selenium and potentially acid toxic material, and protection of riparian zones), we note that it is unclear from the documentation provided whether other BMPs identified in West Virginia's permitting guidance have been incorporated or considered in connection with this permit. These include:

- Test overburden to determine the material that contains sulfur or other ionic strength-bearing material, so it can be isolated through material handling;
- Increase stream buffer zones;
- Minimize fill areas;
- Mine down-dip instead of up-dip;
- Cap fills and spoil so as to minimize pass-through of rain water;
- Develop a plan to reduce or prevent ionic stress;
- If necessary, conduct TRE/TRI pursuant to EPA's TSD;
- Segregate weathered rock and return to surface;
- Expedite reclamation;
- Enhance riparian plantings;
- Limit the number of active fills;
- Restore natural streams

The Rationale Page should contain an explanation of which of these BMPs were considered, which were included in the operation (if any), and which were not included or not considered. In addition, West Virginia's guidance acknowledges that its list is not definitive. Construction of valley fills using smaller lifts and increased compaction also is generally considered to minimize mineralization and should be considered.

Finally, the permit should include benchmarks to define the anticipated efficacy of the BMPs and appropriate monitoring to assure those benchmarks are being achieved. Failure to achieve such benchmarks should be defined as a violation of the permit. The permit also should include provisions requiring the permittee to prepare and submit annual reports on the efficacy of the BMPs and to take additional action in the event a benchmark is not achieved. We also suggest revising Section A.6., Submission of Discharge Monitoring Reports (DMRs) to include quarterly reporting on the performance of the AEPP.

### **Reasonable potential of on-bench discharges**

WVDEP presumes that the on-bench, precipitation-driven discharges lack reasonable potential to cause or contribute to violation of the narrative criteria. As set forth in the Rationale Page, this presumption is based upon the assumption that such outfalls discharge only during precipitation events. Accordingly, it is assumed there will be little contact time with unweathered material and therefore little opportunity for mineralization. WVDEP also assumes that there is little reasonable potential because precipitation-driven discharges will occur when the streams are at their most dilute. The Rationale Page also states that one cannot necessarily conclude that flow from these outfalls will reach waters of the United States.

WVDEP has provided data that demonstrate that each on-bench outfall would have a small catchment area (under 27 acres) likely associated with periodic flows. The calculation of peak flow provided in the supplement to the AEPP, however, appears based solely upon catchment size and does not consider position of each discharge relative to basal flow. The valley fills are constructed on the down dip, and the permit documentation does not indicate which, if any, of the on-bench outfalls are on the downdip side, where there is greater likelihood of more frequent flow due to intersection with basal flow. We recommend that, in determining reasonable potential of the on-bench discharges, WVDEP consider position of each discharge relative basal flow intercept and document this consideration in the Rationale Page.

In addition, the permit documentation does not account for the very large number of on-bench outfalls (147) associated with this permit. This means that multiple on-bench outfalls could be discharging to each receiving water at any given time. While the flow from many of the on-bench outfalls appears directed through the sedimentation ponds at the toe of the corresponding valley fills, many of the on-bench discharge locations appear to discharge directly to each of the receiving streams. For example, according to the documentation provided, in Miller Creek, sedimentation pond 4B would discharge at a peak flow of 131.3 cfs, but in addition there are 19 outfalls discharging directly to Miller Creek with a combined peak flow of 646.7 cfs. While none of the 19 outfalls individually may appear to have large potential peak flows, the combined peak flows to the same receiving stream potentially may be significant, and the reasonable potential analysis does not appear to account for this. We recommend that, where there are multiple outfalls likely to discharge simultaneously, WVDEP take into consideration and document in the Rationale Page whether the cumulative effect of discharges from multiple outfalls to a single receiving stream could cause or contribute to violations of the narrative water quality standard, even if discharges from any individual outfall may not.

Finally, we are concerned that the statement in the Rationale Page discounting the likelihood that flow from the on-bench outfalls will reach waters of the United States would appear to contradict representations made by the applicant in its CWA Section 404 documentation. In its Section 404 documentation, the applicant proposes to seek mitigation credit for converting the on-bench outfalls to jurisdictional waters, which suggests that the outfalls would reach waters of the United States and would support aquatic habitat.

**The applicant did not prepare a sufficient alternatives analysis pursuant to state law**

Where streams are designated as Tier 2, significant degradation (defined by state law as a reduction of more than ten percent of assimilative capacity) by a new or expanded discharge may be authorized only if the applicant agrees to finance and implement an upstream offset or if the permitting authority determines that reasonable and cost-effective non-degrading or less degrading alternatives are not available. W.Va. CSR § 60-5-5.7. The State's regulations provide that "A regulated entity proposing any new or expanded regulated activity that would significantly degrade water quality in a high quality water is required to prepare an evaluation of alternatives to the proposed activity. The evaluation must provide substantive information pertaining to cost and environmental impacts associated with [a list of] alternatives," including: pollution prevention; reduction in scale of the project; water recycle or reuse; process changes; innovative treatment or treatment technologies; advanced treatment or treatment technologies; seasonal or controlled discharge options to avoid critical water quality periods; improved operation and maintenance of existing treatment systems; and alternative discharge locations. W. Va. CSR § 60-5-5.7.b.

According to the Rationale Page for the permit, WVDEP made a determination that less degrading alternatives were not available with respect to discharges of iron and aluminum from 106 outfalls based upon the Alternatives Analysis and Socio-economic Importance Demonstration (AASEID) submitted by the applicant. The AASEID assumes the project will be constructed in its entirety or not at all, and accordingly does not consider alternatives such as a reduction in scale of the project or alternative discharge locations. For example, the AASEID provides no analysis as to whether all of the 13 valley fills are necessary or whether certain valley fills can be eliminated, combined, or relocated without substantial reduction in coal recovery. The AASEID also provides no analysis as to whether valley fills could be reconfigured to be constructed on the updip, which could potentially reduce flows, or whether techniques that are generally known to improve water quality, such as smaller lifts and increased compaction, could be economically employed. The analysis should, therefore, be revised to consider these and other appropriate alternatives, consistent with state-law requirements.

In addition, beginning in Section 5.2 with the reduction in scale alternative, the AASEID groups NPDES outfalls by their receiving BWQ point, calculates the mineral removal area, and then assumes that the percentage of mineral removal area (acres) is equal to the percentage of coal recovered (tons). In other words, the reduction in scale alternative and other alternatives that rely on this assumption are premised upon assumed uniform mineral recovery as a function of area throughout the site. This assumption is unsupported and does not appear likely to be

accurate. The amount of mineral recovery likely will vary depending upon location within the site. At the top of the ridge, there would be many coal seams underneath and therefore greater tonnage recovered per acre of area from that location. By contrast near the permit edge at the outcrop of the primary coal seam, the mineral removal area would only include coal from the primary seam. Recovery also would be different where coal is removed by augering/highwall mining of contour cuts. Accordingly, this assumption supporting the alternatives analysis within the AASEID does not appear supportable.

### **Recommendation to Classify Permit as a Discretionary Major**

Given the scale of the project and the large number of outfalls, we request that WVDEP classify this permit as a discretionary major NPDES permit.